

Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

1. (Previously presented) A method for decoding channel data comprising:
receiving a packet of encoded data; and
decoding the encoded packet using a look-up table that stores information approximating output of an algorithmic decoding process.
2. (Original) The method of claim 1 including performing joint quantization of the data packet before decoding.
3. (Original) The method of claim 1 wherein data in the packet is encoded by turbo coding.
4. (Previously presented) The method of claim 3 wherein decoding includes processing the data in the packet using a parallel concatenated turbo decoder.
5. (Previously presented) The method of claim 1 including decoding the data in the packet using a table that stores information approximating output of a soft-input soft-output algorithmic decoding process, a soft-input hard-output algorithmic decoding process, a hard-input soft-output algorithmic decoding process, or a hard-input hard-output algorithmic decoding process.
6. (Previously presented) A method for decoding channel-encoded date comprising:

- (a) receiving encoded symbols;
- (b) compressing the encoded symbols to obtain compressed symbols;
- (c) decoding the compressed symbols using a first look-up table that stores information approximating output of an algorithmic decoding process to obtain decoded symbols;
- (d) arithmetically combining the compressed symbols with the decoded symbols to obtain a first result; and
- (e) decompressing the first result to obtain a decompressed first result.

7. (Previously presented) The method of claim 6 including:

- (f) interleaving the decompressed first result to obtain an interleaved first result;
- (g) compressing the interleaved first result to obtain a compressed, interleaved first result;
- (h) decoding the compressed, interleaved first result using a second look-up table that stores information approximating output of an algorithmic decoding process to obtain a decoded first result;
- (i) arithmetically combining the decoded first result with the compressed, interleaved first result to obtain a second result;
- (j) decompressing the second result to obtain a decompressed second result; and
- (k) de-interleaving the decompressed second result.

8. (Previously presented) The method of claim 7 including:

repeating (b) through (k) until a predetermined criterion is satisfied; and determining information bits corresponding to the encoded symbols received in (a).

9. (Previously presented) An apparatus for decoding channel-encoded data comprising:

a memory storing a look-up table with information approximating output of an algorithmic decoding process; and

a processor configured to use the look-up table to decode data packets encoded by convolutional coding.

10. (Previously presented) The apparatus of claim 9 wherein the look-up table stores information approximating a soft-input soft-output algorithmic decoding process, a soft-input hard-output algorithmic decoding process, a hard-input soft-output algorithmic decoding process, or a hard-input hard-output algorithmic decoding process.

11. (Previously presented) The apparatus of claim 10 including a joint quantization module for converting soft symbols in a data packet into soft multi-symbols prior to the processor's decoding the data packets using the look-up table.

12. (Previously presented) The apparatus of claim 10 wherein the processor is configured to decode a data packet by turbo decoding.

13. (Previously presented) An apparatus for decoding channel-encoded data comprising:

memory storing a first look-up table with information approximating output of an algorithmic decoding process; and a processor configured to

- (a) compress a packet of received encoded symbols to obtain compressed symbols;
- (b) decode the compressed symbols using the first look-up table to obtain decoded symbols;
- (c) arithmetically combine the compressed symbols with the decoded symbols to obtain a first result; and
- (d) decompress the first result to obtain a decompressed first result.

14. (Previously presented) The apparatus of claim 13 wherein the memory stores a second look-up table with information approximating output of an algorithmic decoding process and wherein the processor is configured to:

- (e) interleave the decompressed first result to obtain an interleaved first result;
- (f) compress the interleaved first result to obtain a compressed, interleaved first result;
- (g) decode the compressed, interleaved first result using the second look-up table to obtain a decoded first result;
- (h) arithmetically combine the decoded first result with the compressed, interleaved first result to obtain a second result;
- (i) decompress the second result to obtain a decompressed second result; and
- (j) de-interleave the decompressed second result.

15. (Previously presented) The apparatus of claim 14 wherein the processor is configured to:

repeat (a) through (j) until a predetermined criterion is satisfied; and determine information bits corresponding to the encoded symbols.

16. (Currently Amended) An article comprising a computer-readable medium that stores computer-executable instructions for causing a computer system to:[] in response to receiving channel-encoded data packet, [[to]] use a look-up table that approximates output of an algorithmic decoding process to decode the channel-encoded data packet.

17. (Previously presented) The article of claim 16 including instructions for causing the computer system to perform joint quantization before using the look-up table to decode the channel-encoded data packet.

18. (Previously presented) The article of claim 16 wherein data in the channel-encoded data packet to be decoded was encoded by turbo coding.

19. (Previously presented) An article comprising a computer-readable medium that stores computer-executable instructions for causing a computer system, in response to receiving a channel-encoded data packet, to:

- (a) compress a packet of received encoded symbols to obtain compressed symbols;
- (b) decode the compressed symbols using a first look-up table approximating output of an algorithmic decoding process to obtain decoded symbols;
- (c) arithmetically combine the compressed symbols with the decoded symbols to obtain a first result; and
- (d) decompress the first result to obtain a decompressed first result.

20. (Previously presented) The article of claim 19 including instructions for causing the computer system to:

- (e) interleave the decompressed first result to obtain an interleaved first result;
- (f) compress the interleaved first result to obtain a compressed, interleaved first result;
- (g) decode the compressed, interleaved first result using a second look-up table approximating output of an algorithmic decoding process to obtain a decoded first result;
- (h) arithmetically combine the decoded first result with the compressed, interleaved first result to obtain a second result;
- (i) decompress the second result; and
- (j) de-interleave the decompressed second result.

21. (Previously presented) The article of claim 20 including instructions for causing the computer system to:

repeat (a) through (j) until a predetermined criterion is satisfied; and determine information bits corresponding to the encoded symbols.

22. (Previously presented) The article of claim 19 including instructions for causing the computer system to decode the compressed symbols using a first look-up table approximating output of a soft-input soft-output algorithmic decoding process, a soft-input hard-output algorithmic decoding process, a hard-input soft-output algorithmic decoding process, or a hard-input hard-output algorithmic decoding process.

23-28. (Withdrawn)

29. (New) A method for decoding channel data comprising:
receiving a packet of encoded data; and
decoding the encoded packet using a look-up table that stores information approximating output of an algorithmic decoding process,
wherein the algorithmic decoding process is a process selected from the group consisting of a soft-input soft-output algorithmic decoding process, a soft-input hard-output algorithmic decoding process, a hard-input soft-output algorithmic decoding process and a hard-input hard-output algorithmic decoding process.

30. (New) A method comprising:

encoding a packet of data at a transmitter;
transmitting the packet of encoded data from the transmitter to a receiver;
receiving the packet of encoded data at the receiver; and
decoding the packet of encoded data at the receiver,
wherein the decoding comprises:

finding data in a look-up table that corresponds to the packet of encoded data, wherein the data in the look-up table approximates an output of an algorithmic decoding process to substantially reverse the encoding.

31. (New) A method comprising:

- (a) encoding a packet of data at a transmitter;
- (b) transmitting the packet of encoded data from the transmitter to a receiver;
- (c) receiving the packet of encoded data at the receiver;
- (d) compressing the packet of encoded data to obtain a compressed packet of encoded data;
- (e) decoding the compressed packet of encoded data using a first look-up table that stores information approximating the output of an algorithmic decoding process to obtain a decoded packet of data;
- (d) arithmetically combining the compressed packet of encoded data with the decoded packet of data to obtain a first result; and
- (e) decompressing the first result to obtain a decompressed first result.